

## HUMAN RESOURCES FOR TREATING NEW CANCER CASES IN BANGLADESH

### Executive Summary

The purpose of this report is to describe the human resources needed in Bangladesh to treat new cancer patients.

The population of Bangladesh is approximately 160 million (80.92 million men and 79.08 million women) and the estimated number of new cancer cases in Bangladesh for the year 2008, based on Globocan data for Bangladesh as a whole (<http://globocan.iarc.fr/>) was 141086 (60028 in men and 81058 in women) (Table A). The five most common cancers in Bangladesh are (1) gynecological (cervix uteri, corpus uteri and ovary), (2) head and neck (lip and oral cavity, nasopharynx, other pharynx, larynx and thyroid), (3) lung, (4) breast and (5) esophagus.

Table A: The ten most frequently occurring cancers in Bangladesh for men and women based on 2008 Globocan data (<http://globocan.iarc.fr/>).

Cancer	Both	Rank	Men	Rank	Women	Rank
<b>All cancers excl. non-melanoma skin cancer</b>	<b>141086</b>		<b>60028</b>		<b>81058</b>	
Gynecological	20346	1			20346	1
Head and Neck	20256	2	11689	2	8567	3
Lung	19529	3	14951	1	4578	4
Breast	17781	4			17781	2
Esophagus	8014	5	4121	4	3893	5
Hematological Malignancies	7611	6	4530	3	3081	6
Stomach	5651	7	3198	6	2453	8
Colorectal	4988	8	2736	7	2252	9
Urological	4812	9	3479	5	1333	11
Liver	4166	10	2302	8	1864	10
Gallbladder	3585	11	797	10	2788	7
Brain, nervous system	1771	12	951	9	820	12

Newly diagnosed cancer patients need pathology, surgery, chemotherapy and/or radiation therapy. The number of oncologists needed is based, therefore, on the number of patients requiring pathology, surgery,

chemotherapy and radiation therapy (Table B). This number is estimated from the percentage of patients requiring surgery, chemotherapy and/or radiation therapy for the top ten cancers in both men and women. For developing countries the International Atomic Energy Agency (IAEA) recommends training radiation/clinical oncologists who can prescribe both radiation and chemotherapy for the common solid cancers, instead of separate medical and radiation oncologists. Hematological malignancies are treated primarily by hematologist-oncologists. The number of specialists needed is based upon the number of cancer patients but each city, in order to ensure coverage if one person leaves or goes on vacation, must have at least 2 surgical oncologists, 2 radiation/clinical oncologists, 2 hematologist oncologists, etc.

Table B: Number of oncologists needed for Bangladesh's two most populous cities based on 2011 population estimates (<http://citypopulation.de/>) and 2008 Globocan data for new cancer cases (<http://globocan.iarc.fr/>).

	New Cancer Cases	Hematologist Oncologists	Surgical Oncologists	Radiation / Clinical Oncologists	Urologic Oncologists	Gynecologic Oncologists	Pathologists
Dhaka	6202	2 <sup>†</sup>	6	32	2 <sup>†</sup>	2	13
Chittagong	2286	2 <sup>†</sup>	3	12	2 <sup>†</sup>	2 <sup>†</sup>	5

<sup>†</sup>At least 2 are needed in each city.

In addition to oncologists, support staff such as onco-pharmacists, pharmacy technicians, oncology nurses and palliative care specialists is also needed. Many cancer patients require hospitalization for diagnosis, treatment and/or complications, therefore an adequate number of oncology beds will be needed. The number of oncology nurses, onco-pharmacists and pharmacy technicians needed is based upon the number of beds occupied daily by cancer patients while the number of palliative care specialists is based on the number of new cancer cases per year (Table C). The oncology nursing staff for each 24-bed oncology unit (operating 24 hours a day, 7 days a week) comprises of one head nurse and a nurse specialist as well as 13 nurses working 8 hour shifts, 5 days per week.

Table C: Number of oncology Units, oncology nursing and pharmacy staff needed for Bangladesh's two most populous cities based on 2011 population estimates (<http://citypopulation.de/>) and 2008 Globocan data for new cancer cases (<http://globocan.iarc.fr/>).

	New Cancer Cases	Oncology Beds/Day	24 bed Oncology Wards	Onco-Pharmacists	Pharmacy Technicians	Palliative Care Specialists	Oncology Ward Nurses
Dhaka	6202	104	5	20	30	13	75
Chittagong	2286	39	2	8	12	5	30

Since many cancer patients require radiotherapy, appropriately equipped facilities will be needed along with radiation oncology staff (Tables D and E). Radiation oncology staff includes radiation therapy technicians, medical physicists, Linac engineers and radiation oncology nurses in addition to radiation/clinical oncologists. The minimum radiation therapy equipment requirements are at least one of each: Linac, brachytherapy unit, CT simulator, treatment planning computer and dosimetry/quality assurance package.

Table D: Radiation Therapy Staff needed for Bangladesh's two most populous cities based on 2011 population estimates (<http://citypopulation.de/>) and 2008 Globocan data for new cancer cases (<http://globocan.iarc.fr/>).

	New Cancer Cases	Radiation / Clinical Oncologists	Radiation Therapy Technicians	Medical Physicists	Linac Engineers	Radiation Oncology Nurses
Dhaka	6202	32	42	14	4	14
Chittagong	2286	12	16	6	2	6

Table E: Radiation Therapy Equipment needed for Bangladesh's two most populous cities based on 2011 population estimates (<http://citypopulation.de/>) and 2008 Globocan data for new cancer cases (<http://globocan.iarc.fr/>).

	New Cancer Cases	Linac / Co 60 Megavolt Unit	Brachytherapy Units	CT Simulators	Treatment Planning Computers	Dosimetry /QA Packages
Dhaka	6202	7	4	4	4	4
Chittagong	2286	3	2	2	2	2

**NOTE:** Guidelines from the IAEA of the United Nations were used to calculate the radiation therapy equipment and staff needed in the setting of a developing country. Guidelines from the Oncology Nursing Society were used to calculate the number of nurses needed. Several other specialty societies were also requested to provide guidelines but in most cases there were none, therefore colleagues active in those fields were consulted for estimating the number of staff needed.